**CSCI 1301 Lecture 4**

Key points of this lecture:  
1- String Object  
2- Primitive data types  
3- Vriable Declaration and Initialization  
4- Constants  
We learned that there are two data types in Java, objects and primitives. We also learned that there are eight primitive types in Java. The primitive types are byte, short, int, long, float, double, char, and boolean. Based on the data type, the appropriate primitive type will be selected. Types byte, short, int and long are to store integers without decimal point. Types float and double are to store numbers with decimal points, whole numbers. The type char is to store one character. The type boolean is to store true or false.  
  
**String as an object**:  
  
  
One of the most popular and instrumental usage of objects in Java is character string representation. A string literal is a character string, text, surrounded by double quotes. Every character string is an object in Java defined by the “String” class. We already used this class is a Java  
  
**Statement such as**:  
  
  
System.out.println(“Hello CSCI 1301”);  
String concatenation: the string concatenation operator “+” is used to append one string at the end of another. For example:  
  
System.out.print( “CSCI 1301 “ + “is a Java course.”); this statement will print the following: CSCI 1301 is a Java course.  
The concatenation operator “+” will also append a number to a string.   
  
**Example**:  
  
  
System.out.println(“We have “ + 25 + “ computers in the computer lab.”); This will print the following: We have 25 computers in the computer lab.  
  
  
System.out.println(“We have “ + 2 + 5 + “ computers in the computer lab.”); This will print the following: We have 25 computers in the computer lab.  
System.out.println(“We have “ + (2 + 5) + “ computers in the computer lab.”); This will print the following: We have 7 computers in the computer lab.  
  
**Escape characters or sequences**:  
  
To print a special character to do something different than what the compiler’s interpretation we use escape character or escape sequence. The escape sequence is the backslash character “\” followed by the special character. The following are some of the escape sequences that we can use with a string literal:  
\n new line  
  
\” to print double quotes  
  
\’ to print a single quote  
  
\t to print a tab  
  
\r to print carriage return  
  
\b backspace  
  
\\ to print a backslash  
  
**Variables**:  
Simply we can say that the variable is a name for a location in memory that stores a certain value. To label the memory location with the variable name and to assign a value to be stored, we perform two standard activities. The first is the variable declaration and the second is the variable initialization. The variable declaration is the specification of the data type and the variable name. Example of variable declaration:   
  
int age;  
  
int stuNumber;  
  
char grade;  
  
double gpa;  
  
Multiple variables, of the same type, can be declared in one statement. For example: int age, stuNumber, counter;  
The variable initialization is the step where we give a value, or initialize, the variable. For example:  
  
age = 21;  
  
stuNumber = 26;  
  
grade = ‘A’;  
  
gpa = 3.5;  
  
If we know the initial value of the variable we can declare and initialize the variable in one statement. For example:  
int stuNumber = 26;  
  
The statement above is similar to the following two statements:  
  
int stuNumber;  
  
stuNumber = 26;  
  
Also multiple variables of the same type can be declared and initialized in one statement. For example:  
int age = 21, stuNumber = 26, maxGrade = 100;  
  
When variable name is referenced, the variable value is used. For example:  
System.out.println(“My age is “ + age);  
The above Java statement will print: My age is 21  
  
**Constant**:  
  
The constant is an identifier similar to a variable except that the value of a constant will not change again. Once the constant receives its value, initialized, it will retain this same value during its existence. This is why in Java we use the reserved word or identifier “final” to declare a constant.  
  
Constant declaration and initialization in two separate statements:  
  
final int SPEED\_LIMIT;  
  
SPEED\_LIMIT = 55;  
Constant declaration and initialization in one statement:  
  
final int SPEEDLIMIT = 55;